

### **REMARKS**

This Amendment is responsive to the Office Action mailed on February 12, 2004. Claims 1 and 8 are amended herein. Claims 1-14 are pending.

Claims 1-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Eckley (WO 92/12478) in view of Grundmann, "Flash Memory Technology and Techniques" (Grundmann).

Applicants respectfully traverse these rejections in view of the amended claims and the comments which follow.

#### **Discussion of Amended Claims**

Claims 1 and 8 are amended to specify that, in the event an interrupt is generated, the processor obtains a next instruction from one of the interrupt vector addresses of the fixed vector table in accordance with the interrupt. The next instruction points to a corresponding location in the software vector table. The corresponding location in the software vector table points to a corresponding location in one of the first or second application areas. These amendments are supported by Figure 2 and the corresponding description on page 9 of the specification.

#### **Discussion of Prior Art**

Eckley discloses a memory system of a transaction automation system. The memory system of Eckley goes through an initialization sequence which continuously modifies a software vector table. Each step of the way the initialization process of Eckley uses the modified vector table to perform some function. For example, ROM 101-1 of Figure has a vector table in it. As initialization progresses, the software in ROM 101-1 generates one or more software vector tables 101-3b. It then passes control to PROM 101-2, which is used to store modified programs corresponding to the programs stored in ROM-101-1. As PROM 101-2 performs its initialization

it adds to and/or modifies the vector tables in ROM 101-3b. Then PROM 101-2 passes control to RAM 101-3, which also modifies and/or adds to the vector tables in RAM 101-3b. All of these steps create, modify, or use vector tables in 101-3b. Once the initialization process begins in Eckley, it never returns to using the original vector table in ROM 101-1 (Eckley, pages 7-9; and Figure 1).

Eckley does not disclose or remotely suggest the interrupt scenario provided by amended claims 1 and 8. Eckley discloses only an initialization routine which relies on continuously modified software vector tables 101-3b. In contrast, Applicants' amended claims 1 and 8 set forth an interrupt routine where, in the event an interrupt is generated, the processor obtains a next instruction from one of the interrupt vector addresses of the fixed vector table in accordance with the interrupt. The next instruction points to a corresponding location in the software vector table. The corresponding location in the software vector table points to a corresponding location in one of the first or second application areas. With Applicants' claimed invention, when the firmware is upgraded, after a reset, the software vector table is filled with proper corresponding interrupt vector addresses for the interrupt vectors contained in the fixed vector table as determined by the upgraded version of firmware. Therefore, the fixed vector table of the present invention can remain fixed even in the event of a firmware upgrade, so that when an interrupt is generated, the processor first looks to the fixed vector table, which points to the software vector table that now contains addresses that have been modified by the upgraded firmware.

As discussed on page 3 of Applicants' specification, in systems where the vector table is a fixed vector table, problems arise when the processor is provided with the ability to load from two different banks of code which may be running two different versions of firmware. Because the starting addresses for the interrupt service routines could be different in each version of firmware, the entries in the vector table would typically have to be different for each version of firmware. The present invention solves this problem and enables firmware to run from either bank of memory while still maintaining the fixed vector table. Eckley does not address the problems associated with interrupt service routines using a single fixed vector table in a system where the firmware is upgradeable.

Eckley does not disclose or remotely suggest an interrupt scenario that refers back to the fixed vector table, even when the firmware has been upgraded, as claimed by Applicants. Eckley discloses only an initialization routine that relies on a continuously modified software vector tables.

The Grundmann article discloses Flash memory that can be partitioned into sections for storing boot code, executable code, configuration data, and files. Grundmann does not disclose or remotely suggest the handling of an interrupt. In particular, Grundmann does not disclose or remotely suggest handling of an interrupt by referring back to a fixed vector table after a firmware upgrade as claimed by Applicants in amended claims 1 and 8.

Therefore, the combination of Eckley and Grundmann does not disclose or remotely suggests methods or apparatus for upgrading firmware wherein, in the event an interrupt is generated, the processor obtains a next instruction from one of the interrupt vector addresses of the fixed vector table in accordance with the interrupt, and the next instruction points to a corresponding location in the software vector table, which in turn points to a corresponding location in one of the first or second application areas, as claimed by Applicants.

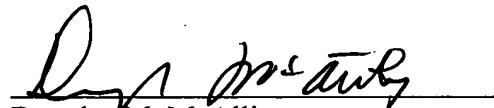
Applicants respectfully submit that the present invention would not have been obvious to one skilled in the art in view of the combination of Eckley and Grundmann, or any of the other prior art of record.

Further remarks regarding the asserted relationship between Applicant's claims and the prior art are not deemed necessary, in view of the amended claims and the above discussion. Applicant's silence as to any of the Examiner's comments is not indicative of an acquiescence to the stated grounds of rejection.

Conclusion

In view of the above, entry of the present amendment and reconsideration and allowance of each of the claims is respectfully requested. If there are any remaining issues that need to be addressed in order to place this application into condition for allowance, the Examiner is requested to telephone Applicants' undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Doug McAllister", is written over a horizontal line.

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